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PIKE PERCH BREEDING IN THE PONDS AND SMALL RESERVOIRS OF MOLDAVIA
[O razvedenii sudaka v prudakh i malykh vodokhranilishchakh Moldavii]

by

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Ponds and small reservoirs are the main base of the fishing industry in Moldavia. They constitute about 50% of the entire fishery area of the Republic. More than 75% of all the fish come from here. However, the fish productivity of the ponds is still low. In 1960-61, it was not over 85 kg/hectare on the average and it reached 800-1000 kg/hectare only in individual fattening ponds.

One of the causes of low fish productivity of the majority of ponds and small reservoirs is the high clogging of them with species of fish, which are hard to raise, mainly consumers of the same natural food on which

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valuable commercial fish (carp, bream, etc.) feed. Thus, for example, in the raceway of the Lazovsk Reservoir, trash fish (Leucaspius, gudgeon, bitterling, loach, small southern stickleback and bullheads) constituted 95.7% of the total in 1960, and, in the Kishkarenskiy and Komratskiy Reservoirs, stocked with carp and crucian, 56.4% and 82.9% of the fish population, respectively.

The same high population of trash fish is characteristic of the small rivers of Moldavia. These rivers are a source of constant clogging of the reservoirs and ponds built on them. In the ponds of the Michurin Collective Farm, Lazovsk region, according to the data of control catches on 18 April 1962, the relative population of trash fish was: in Odaya pond, 42.4%, in Pobeda pond, 99.5%, and 99.8% in the Divoryanu pond, with a total population of 19-74,000 per hectare of water area.

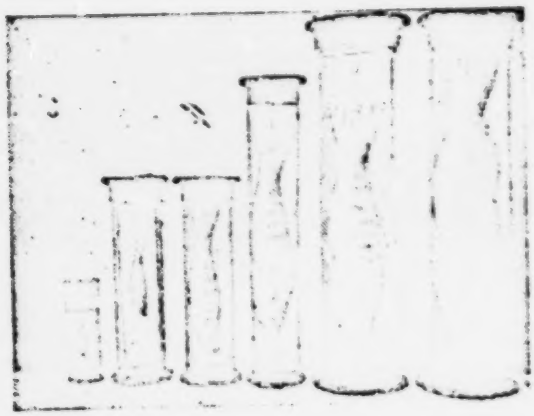
In the ponds of the Ovoshchevod State Farm, Orgeyevsk region, which are regularly stocked with carp, the relative population of trash fish (mainly, Leucaspius and gudgeon), on 6 June 1962 was: 34.3% in pond No. 1, 87.2% in pond No. 2 and 92.8% in pond No. 3, with a total population of them of 7.2-21.9 thousand per hectare of water area.

With such a population of the reservoirs with trash fish, not only are feeding resources used inefficiently, but no effect can be achieved from the use of various intensive measures. Suffice it to note that the Leucaspius, for example, during the growing period, consumes up to 24.7% of its own weight in food per day, on the average, but the yearling carp only 7.7% and the year old bream, 7.3%.

The conclusion from this: to limit reproduction of trash fish in all possible ways. It is most advisable to cultivate pike perch in the

ponds. As is well-known, it is a predator, and, moreover, it has comparatively fast growth. Good results can be achieved by growing pike perch in a polyculture with other rapidly growing fish, carp, in particular.

We grew the current year's crop of pike perch together with carp, in the growing pond of the Dubossarskiy Fish Hatchery in 1959 and 1961, and in the Verkhniye Dancheny fattening pond of the Kishinev Fish Farm. Pike perch, as a rule, upon reaching 3.7 cm long, begin to hunt young fish and, at a length of 5.7-6 cm, almost completely change to a fish diet. They can be put out to fatten in this period.



Growth of 25-day old pike perch of the current year crop to 155 days of age, obtained in the ponds of the Kishinev Fish Farm. In the first cylinder, the current year's crop, in the second, a 40-day pike perch weighing 5 g, in the third, at age 78 days (weight 36 g), in the fourth, 101 days (75 g), in the fifth, 137 days (135 g) and, in the sixth, 155 day old pike perch (weight 220 g).

Upon draining the pond, it was determined that the following grew in a 1-hectare water area on the average: in the period from 16 May to 24 July 1959, 125,000 specimens of young carp, with an average weight of 0.85 g each, and 85.5 thousand specimens of pike perch, with an average weight of 15.2 g, and, in the period from 6 May to 11 September 1961, 33,400 specimens of young carp, with an average weight of 30 g, 650 specimens of bream at 18 g each and 375 specimens of pike perch, at 103 g each.

Moreover, 6000 were caught from this pond on 20 June 1959 and 5000 specimens of young pike perch, on 8 June 1961.

The fish output of the pond in the time of operation indicated was, in 1959, 1410 kg/hectare and, in 1961, 1052 kg/hectare, i.e., it turned out to be comparatively high. This is evidence of extensive possibilities of growing young pike perch here, for the stocking of artificial reservoirs.

On 8 June 1961, 5000 specimens of young pike perch, from 4 to 5 cm in size, were released into the Verkhniye Dancheny fattening pond of the Kishinev Fish Farm, with an area of 115 hectares. This pond was drained in the fall of the preceding year and then filled and, in the spring of 1961, it was stocked with 1270 specimens per hectare of water area of yearling carp. Despite this, as is evident from Table 1, it turned out to be significantly populated with trash fish.

TABLE 1. DATA OF CONTROL SEINE CATCHES IN THE VERKHNIYE DANCHENY POND

a Вид рыб	b 23 июня 1961 года		c 24 августа 1961 года	
	d количество рыб в среднем на одно притягивание	e в %	d количество рыб в среднем на одно притягивание	e в %
f Верховка	5	0,52	—	—
g Карась обыкновенный	20	2,06	513	8,88
h Карась золотой	2	0,20	—	—
i Карась серебряный	99	10,33	1.824	32.19
j Карп	30	3,09	30	0,52
k Щиповка	—	—	171	2,97
l Малая южная колюшка	3	0,31	—	—
m Судак	11	1,13	6	0,14
n Окунь обыкновенный	800	82,39	3.192	55,30

Key: a. fish species
b. 23 June 1961
c. 24 August 1961
d. average number of fish per haul
e. in %
f. Leucaspius
g. gudgeon
h. goldfish
i. crucian carp
j. carp
k. loach
l. small southern stickelback
m. pike perch
n. striped perch

The food of the young pike perch here included only four species of fish, among which the gudgeon and striped perch, i.e., fish species represented in bulk in the reservoir, occupied first place (see Table 2).

It is characteristic that the silver carp, represented numerously in the pond (see Table 1), were not found in a one of the stomachs of the young pike perch examined. This evidently is connected with the non-coincidence of their fattening sites, as well as with the abundance of such fish as the gudgeon, striped perch and others, which are the basic food of the pike perch, available to it in the pond. This was noted in the Dubossarsk Reservoir.

TABLE 2. FOOD OF YOUNG PIKE PERCH IN THE VERKHNIYE DANCHENY POND

a Компоненты	b Частота встречаемости в желудках (%)	Количество компонента пищи в %, % от потребленных организмов	
		d по численности	e по весу
f Верховка	5.9	4.8	8.3
g Пескарь	47.0	42.9	29.5
h Щиповка	19.8	19.0	11.0
i Ерш	41.2	33.3	51.2

Key: a. components
b. rate of occurrence in stomachs (%)
c. number of food component in % of that consumed by organisms
d. by population
e. by weight
f. Leucaspius
g. gudgeon
h. loach
i. striped perch

Concerning the size ratios of the predators and the victims, the following pattern was found in this case: maximum size of the fish swallowed by the young pike perch, up to 10 cm long, was 16% by weight and 51% by length of the size of the predator and, in the young from 10 to 25 25 cm, 5% by weight and 31% by length.

We point out in passing that, in the Dubossarsk Reservoir, as our studies showed, the maximum sizes of the victims, with respect to the sizes of the predators, were: in the current year's crop of pike perch, 9.4% by weight and 41% by length; in the two year olds, 11.3% and 42%, respectively; in the three year olds, 6.8% and 40%; in the four year olds, 6.6% and 37%;

in the five year olds, 7.3% and 49%; in the six year olds, 2% and 28% and, in the seven year olds, 3.3% by weight and 29% by length.

It is seen from the data presented that both the yearling and adult specimens of pike perch are consumers of only those fish, which they significantly exceed in weight and 2-3 times in body length.

155-day old pike perch

It is well known that nourishment is one of the leading factors, which ensure normal vital activity of the organism. This appears especially graphically in its growth. For the current year crop of young pike perch, in particular, in the Verkhniye Danchemy pond, the nutritional conditions turned out to be exceptionally favorable and ensured quite intensive growth of them, which is seen from Table 3 (1961).

TABLE 3

a Дата	b Длина тела (см)			c Вес (г)		
	d минимальная	e максимальная	f средняя	d минимальный	e максимальный	f средний
23.VI	5,3	8,3	6,9	1,8	7,8	4,6
1.VIII	—	—	13,5	—	—	36,5
24.VIII	15,4	20,4	17,7	46,0	115,0	75,3
29.IX	20,2	22,5	21,3	116,0	160,0	135,0
17.X	24,5	26,3	25,2	193,0	232,0	223,8

Key: a. date
b. body length (cm)
c. weight (g)
d. minimum
e. maximum
f. average

The yield of the current year crop at the end of the growing period exceeded 41% of the number of fingerlings stocked, without counting specimens carried away with the water during draining of the pond.

As is seen from the data presented, the pike perch can be used fully, to destroy trash fish in carp fattening ponds and small

reservoirs. Growing it in these reservoirs as supplementary fish permits a considerable amount of the natural feed eaten by the trash fish to be released and, thereby, fattening conditions for the carp and other valuable fish to be improved and additional fish production to be obtained, as well.

The data on growth of the pike perch in the Verkhinye Dancheny pond also are evidence that, in carp fattening ponds of Moldavia, where there are trash fish, the carp can be grown to table size in one summer.